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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/621,567	07/21/2000	Tomio Amano	13611 (JA9-1999-0054)	5005

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EXAMINER	
AKHAVANNIK, HUSSEIN	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/621,567	AMANO, TOMIO	
	Examiner	Art Unit	
	Hussein Akhavannik	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☒ Claim(s) *1 and 3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings are required in this application because the proposed drawing corrections to figures 2, 3, 6, 7, and 8 (filed December 15, 2003 and now Paper No. 9) are approved. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Response to Amendment

2. The amendments to the specification overcome the Examiner's objections cited in paragraph 2 of the previous office action (now Paper No. 5).

3. The amendments to the abstract overcome the Examiner's objection cited in paragraph 3 of the previous office action (now Paper No. 5).

4. The amendments to claims 5, 8, 12, and 17 overcome the Examiner's 35 U.S.C. 112 rejection cited in paragraph 5 of the previous office action (now Paper No. 5).

Response to Arguments

5. Applicant's arguments filed March 15, 2004 have been fully considered but they are not persuasive.

On page 14, lines 1-19, the Applicant alleges that Bloomberg encodes information in an iconic version of the text image, such as a the version of the text image that replaces the original document image so that the original document cannot be recovered from the iconic version of the text image. Therefore, the Applicant alleges that Bloomberg does not teach "embedding

additional watermarking information into the data representing text information". The Examiner respectfully disagrees. Bloomberg teaches in column 10, lines 38-48 that the binary data may be encoded in a format that permits the encoded data to fit within the dimensions of the one or more text bound boxes of the input text image. By inserting the encoded data blocks into the input text image, and thereby replacing the original text regions, Bloomberg does teach embedding watermarking information into the data representing text information. The original text regions are replaced with encoded (or watermarked) text regions based on the original text regions. Every watermarking system imperceptibly inserts data (such as the binary data of Bloomberg explained in column 8, lines 14-48) into a region of the original documents, thereby replacing (or altering) the original region with an encoded region. Therefore, by replacing the original text regions with encoded text regions, as illustrated in step 240 of figure 1, Bloomberg does teach "embedding additional watermarking information into the data representing text information".

On page 14, lines 20 to page 15, line 4, the Applicant alleges that Bloomberg does not disclose "dividing the subblocks into two or more groups". The Examiner respectfully disagrees. Bloomberg illustrates that the subblock 30 is divided into multiple groups labeled by "0" and "1" in figure 9.

On page 15, lines 5-11, the Applicant alleges that Bloomberg does not teach either one or a combination of the number of black pixels, the transitive number of black and white pixels, the occurrence frequency of any specific local pattern or the average thickness of a line segment. The Examiner respectfully disagrees. Bloomberg explains in column 11, lines 36-46 that a feature corresponds to block height, which corresponds to average line thickness as illustrated in figure 15.

On page 15, lines 12-22, the Applicant alleges that Bloomberg does not teach dividing the subblocks into different physically located upper and physically located lower groups. The Examiner respectfully disagrees. The subblock illustrated by Bloomberg in figure 9 is divided into groups that are physically higher and lower than each other. Each of the groups is labeled as belonging to the foreground color ("1") or belonging to the background color ("0").

Claim Objections

6. Claims 1 and 3 are objected to because of the following informalities:

Referring to claim 1, line 2, "into the data" should be changed to "into data".

Referring to claim 3, line 2, "the document" should be changed to "a document".

Referring to claim 3, line 2, "image. Having" should be changed to "image, having".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claim 2, this claims recites the limitation "one phase or many phases" that is not supported by the specification. It is not understood what the applicant means by "phase" in these claims.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bloomberg (U.S. Patent No. 5,761,686).

Referring to claim 1,

i. Detecting text image area is illustrated by Bloomberg in figure 1 by step 210 and illustrated in figure 2 by the input document image 10.

ii. Splitting the embedded text image area into two or more subblocks is illustrated by Bloomberg in figure 4 by the subblocks 52, 53, 54, ...and explained in column 9, lines 48-63.

iii. Dividing the subblocks into two or more groups is illustrated by Bloomberg in figure 9. The subblock 30 is divided into multiple groups, each labeled by "0" and "1".

iv. Extracting features for the respective groups is explained by Bloomberg in column 11, lines 36-46. Bloomberg explains that the characteristics, referred to as "display features", may include interblock spacing, block height, block length, and interline spacing.

v. Modifying the features based on additional information is illustrated by Bloomberg in figure 15 by the modification of the block height and explained in column

16, lines 34-60. Bloomberg modifies one of the extracted display features, such as block height in figure 15, in order to embed the binary sequence.

vi. Embedding the features into the respective groups is illustrated by Bloomberg in figure 16, wherein the modified display features, specifically the block heights, are embedded in the groups, which make up a subblock.

Referring to claim 2, embedding the features for the respective groups to increase or decrease them to one phase or many phases is illustrated by Bloomberg in figure 15, wherein the feature of block height is increased (expand) or decreased (shrink) or the feature of block position is increased (shift up) or decreased (shift down).

Referring to claim 3,

i. Detecting text image area corresponds to claim 1i.

ii. Splitting the text image area into two or more subblocks corresponds to claim 1ii.

iii. Dividing the subblocks into two or more groups corresponds to claim 1iii.

iv. Detecting the features from respective groups corresponds to claim 1iv.

v. Detecting additional embedded information based on the features is illustrated by Bloomberg in figure 17 in step 560.

Referring to claim 4, detecting additional embedded information by integrating the features detected from the respective groups is illustrated by Bloomberg in figures 15 and 16. In the third embedding embodiment (corresponding to figures 15 and 16) both the block height and vertical block position are adjusted. Therefore, by detecting the features from the respective groups in order to accurately detect the additional embedded information, both features must be detected and integrated.

Referring to claims 5 and 12,

i. Dividing the embedded text image area into two subblocks vertically and two or more subblocks horizontally is illustrated by Bloomberg in figures 4 and 6. Bloomberg illustrates dividing the text image area into multiple subblocks vertically in figure 4. In figure 6, Bloomberg illustrates a text image area 186 consisting of two columns, which be divided into two subblocks horizontally.

ii. Dividing the subblocks into different physically located upper and physically located lower groups is illustrated by Bloomberg in figure 9. The subblock 30 is divided into groups that are physically higher and lower than each other. Each of the groups are labeled as belonging to the foreground color ("1") or belonging to the background color ("0").

iii. Modifying the features of the respective groups to increase or decrease the features in one or more steps is illustrated by Bloomberg in figure 15, wherein the feature of block height is increased (expand) or decreased (shrink) or the feature of block position is increased (shift up) or decreased (shift down).

Referring to claims 6 and 13,

i. Detecting the image area corresponds to claim 1i.

ii. Modifying the features of the text image area corresponds to claim 1v.

iii. Embedding one or more bit of embedded additional watermarking information into two or more lines is illustrated by Bloomberg in figures 3 and 16. The binary data illustrated in figure 3 (one or more bits) is embedded into two lines as illustrated in figure 16 according to the third embedding embodiment.

Referring to claims 7 and 14, detecting one or more bit of embedded additional watermarking information from two or more lines is explained by Bloomberg in column 19, lines 13-56. Bloomberg explains that after the bounding rectangles corresponding to the text boxes are found, then the verification process is performed to ensure that the encoded data blocks are identified correctly. By identifying the encoded data blocks, it is inherent that the one or more bits of watermarking information would be detected.

Referring to claim 8,

i. Detecting the text image area corresponds to claim 1i.

ii. Splitting the embedded text image area into two or more subblocks corresponds to claim 1ii.

iii. Dividing the subblocks into two or more groups corresponds to claim 1iii.

iv. Modifying the features for respective groups to increase or decrease the features in one or more steps corresponds to claim 5iii.

Referring to claim 9,

i. Detecting the text image area corresponds to claim 1i.

ii. Splitting the embedded text image area into two or more subblocks corresponds to claim 1ii.

iii. Dividing the subblocks into two or more groups corresponds to claim 1iii.

iv. Integrating the features detected from the subblocks in respective groups corresponds to claim 4.

v. Determining the value of the information by comparing the integrated values of the groups is explained by Bloomberg in column 21, lines 30-45. Bloomberg explains

that the quantized values, produced from the distribution data, are ordered to provide the message bit pattern of the embedded binary data. By ordering the quantized values, it would be inherent that the values would have to be compared to each other.

Referring to claim 10, the feature comprising either one or a combination of the number of black pixels, the transitive number of black and white pixels, the occurrence frequency of any specific local pattern or the average thickness of a line segment is explained by Bloomberg in column 11, lines 36-46 and illustrated in figure 15. On of the features explained by Bloomberg is block height, which corresponds to average line thickness as illustrated in figure 15.

Referring to claim 11, the image area for embedding or detecting the additional watermarking information being a rectangle circumscribed around a text line is illustrated by Bloomberg in figure 4.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hussein Akhavannik whose telephone number is (703)306-4049. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on (703)305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hussein Akhavannik
May 31, 2004

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